

Claims

[1] An array substrate comprising:
a transparent substrate including a display region that displays an image, a peripheral region having a driving circuit for displaying an image through the display region, and a sealine region that surrounds the display region to define the display region and the peripheral region;
a first insulation layer formed over the transparent substrate, the first insulation layer having an opening window in the sealine region; and
a pixel electrode formed on the first insulation layer of the display region.

[2] The array substrate of claim 1, wherein the opening window penetrates the first insulation layer to expose the transparent substrate.

[3] The array substrate of claim 1, wherein the first insulation layer corresponds to an organic layer.

[4] The array substrate of claim 1, further comprising a second insulation layer between the first insulation layer and the transparent substrate, and wherein the opening window exposes the second insulation layer.

[5] The array substrate of claim 4, wherein the second insulation layer corresponds to a silicon nitride layer (SN_x).

[6] The array substrate of claim 1, further comprising a switching device having a gate electrode, a drain electrode that is electrically connected to the pixel electrode and a source electrode, a gate line that is electrically connected to the gate electrode, and a data line that is electrically connected to the source electrode, wherein a portion of the data line overlaps with the pixel electrode.

[7] A liquid crystal display apparatus comprising:
an array substrate including:
a transparent substrate including a display region that displays an image, a peripheral region having a driving circuit for displaying an image through the display region, and a sealine region that surrounds the display region to define the display region and the peripheral region;
a first insulation layer formed over the transparent substrate, the first insulation layer having an opening window in the sealine region; and
a pixel electrode formed on the first insulation layer of the display region;
a color filter substrate facing the array substrate;
a liquid crystal layer interposed between the array substrate and the color filter

substrate; and
a sealing member formed at the opening window to bond the array substrate and the color filter substrate.

[8] The liquid crystal display apparatus of claim 7, wherein the opening window penetrates the first insulation layer to expose the transparent substrate, so that the sealing member makes contact with the transparent substrate.

[9] The liquid crystal display apparatus of claim 7, wherein the first insulation layer corresponds to an organic layer.

[10] The liquid crystal display apparatus of claim 7, further comprising a second insulation layer between the first insulation layer and the transparent substrate, and wherein the opening window exposes the second insulation layer, so that the sealing member makes contact with the second insulation layer.

[11] The liquid crystal display apparatus of claim 10, wherein the second insulation layer corresponds to a silicon nitride layer (SiNx).

[12] The liquid crystal display apparatus of claim 7, further comprising a switching device having a gate electrode, a drain electrode that is electrically connected to the pixel electrode and a source electrode, a gate line that is electrically connected to the gate electrode, and a data line that is electrically connected to the source electrode, wherein a portion of the data line overlaps with the pixel electrode.

[13] A method of forming an array substrate, comprising:
forming a first insulation layer over the transparent substrate including a display region that displays an image, a peripheral region having a driving circuit for displaying an image through the display region, and a sealine region that surrounds the display region to define the display region and the peripheral region;
removing a portion of the first insulation layer to form an opening window in the sealine region; and
forming a pixel electrode on the first insulation layer of the display region.

[14] The method of claim 13, wherein the opening window penetrates the first insulation layer to expose the transparent substrate.

[15] The method of claim 13, wherein the first insulation layer corresponds to an organic layer.

[16] The method of claim 13, further comprising forming a second insulation layer between the first insulation layer and the transparent substrate, and wherein the

opening window exposes the second insulation layer.

[17] The method of claim 16, wherein the second insulation layer corresponds to a silicon nitride layer (SiNx).

[18] A method of forming a liquid crystal display apparatus, comprising:
forming an array substrate including i) a transparent substrate including a display region that displays an image, a peripheral region having a driving circuit for displaying an image through the display region, and a sealine region that surrounds the display region to define the display region and the peripheral region, ii) a first insulation layer formed over the transparent substrate, the first insulation layer having an opening window in the sealine region, and iii) a pixel electrode formed on the first insulation layer of the display region;
forming a sealing member at the opening window;
attaching a color filter substrate to the sealing member to assemble the array substrate to the color filter substrate; and
forming a liquid crystal layer between the array substrate and the color filter substrate.

[19] The method of claim 18, wherein the opening window penetrates the first insulation layer to expose the transparent substrate, so that the sealing member makes contact with the transparent substrate.

[20] The method of claim 18, wherein the first insulation layer corresponds to an organic layer.

[21] The method of claim 18, wherein the array substrate further includes a second insulation layer between the first insulation layer and the transparent substrate, and the opening window exposes the second insulation layer, so that the sealing member makes contact with the second insulation layer.

[22] The method of claim 21, wherein the second insulation layer corresponds to a silicon nitride layer (SiNx).

[23] The array substrate of claim 1, wherein the liquid crystal layer is injected between the array substrate and the color filter substrate by a vacuum injection method.